

We claim:

1. An arrangement for obtaining measurable voltage signals in a utility meter, the measurable voltage signals representative of a power line voltage signal, the arrangement comprising:
  - a first connection to a phase of a power line;
  - a second connection to a reference of a power line;
  - a voltage divider circuit disposed on a circuit board and coupled between a first node and the second connection, the voltage divider circuit having an output configured to provide measurable voltage signals to a circuit operable to generate voltage measurement information, the voltage divider circuit having a first impedance value;
  - a series impedance element disposed apart from the circuit board, the series impedance element configured for current limiting and coupled between the first connection and the first node, the series impedance having a second impedance value.
2. The arrangement of claim 1, wherein a ratio of the second impedance value to the first impedance value is less than 1/1000.
3. The arrangement of claim 1, wherein the series impedance element is a wire wound resistor.
4. The arrangement of claim 1, wherein the series impedance element is a resistor having a resistance in excess of about 100 ohms.

5. The arrangement of claim 1, wherein the second impedance value is less than about one thousand ohms and the first impedance value is in equal to or greater than about one million ohms.
6. The arrangement of claim 1, wherein the series impedance element has a central element and two leads, the arrangement further comprising an insulation sleeve that substantially covers the central element and at least one of the two leads.
7. The arrangement of claim 1 further comprising:
  - a third connection to a second phase of a power line;
  - a second voltage divider circuit disposed on the circuit board and coupled between a second node and the second connection, the second voltage divider circuit having an output configured to provide second phase measurable voltage signals to the circuit, the second voltage divider circuit having substantially the first impedance value;
  - a second series impedance element coupled between the third connection and the second node, the second series impedance element having approximately the second impedance value.
8. The arrangement of claim 7 further comprising a first sleeve disposed around one of the series impedance element and the second series impedance element.
9. The arrangement of claim 7 further comprising a first sleeve disposed around the series impedance element and a second sleeve disposed around the second series impedance element .

10. The arrangement of claim 1 wherein the voltage divider circuit includes more than two resistors connected in series.
11. An arrangement for obtaining measurable voltage signals in a utility meter, the measurable voltage signals representative of a power line voltage signal, the arrangement comprising:
- a first connection to a phase of a power line;
  - a second connection to a reference of a power line;
  - a measurement circuit coupled between a first node and the second connection, the measurement circuit disposed on one or more circuit boards, the measurement circuit including a circuit operable to generate digital voltage measurement information, the measurement circuit having a first input impedance value; and
  - a series impedance element having an impedance value of at least 100 ohms coupled between the first connection and the first node, and wherein first input impedance value is greater than the impedance of the series impedance element.
12. The arrangement of claim 11, wherein a ratio of the impedance value to the first input impedance value is less than 1/1000.
13. The arrangement of claim 11, wherein the series impedance element is a wire wound resistor.

14. The arrangement of claim 11, wherein the impedance value is less than about one thousand ohms and the first input impedance value is in equal to or greater than about one million ohms.
15. The arrangement of claim 11, wherein the series impedance element has a body and two leads, the arrangement further comprising an insulation sleeve that substantially covers the body and at least one of the two leads.
16. A method, comprising:
- a) connecting a series impedance element between a line voltage connection of a utility meter and an input to a measurement circuit of a utility meter, the measurement circuit having an input impedance, the series impedance having a first impedance greater than 100 ohms and less than the input impedance; and
  - b) connecting the line voltage connection of the utility meter to a power line being measured.
17. The method of claim 16, further comprising, prior to step a), electrically disconnecting the line voltage connection of the utility meter from the power line being measured.
18. The method of claim 16, wherein the series impedance element includes a central element and two leads, and further comprising placing an insulating sleeve over at least one of the two leads and the central element.

19. The method of claim 16, further comprising, prior to step b), connecting a second series impedance element between a second line voltage connection of the utility meter and an input to a second measurement circuit of the utility meter, the second measurement circuit having a second input impedance, the second series impedance element having a second impedance greater than 100 ohms and less than the second input impedance.
20. The method of claim 16, further comprising, prior to step b), calibrating the measurement circuit.